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Section I. - General Information

Project Name: Napa River/Napa Creek Flood Protection Project

Project Location: Napa, California ***County:*** Napa County

Name and address of sponsoring agency or non-profit organization:

Napa County Flood Control and Water Conservation District, 1001 Second Street, Suite 145, Napa, California 94559

Name of Project Manager (contact): Heather Stanton

Phone Number: (707) 259-8600 ***Email Address:*** Hstanton@co.napa.ca.us

Grant Request Amount: $5 Million

Heather Stanton
Project Manager

Date: February 13, 2002

Project Objective:

The U.S. Army Corps of Engineers (Corps) and the Napa County Flood Control and Water Conservation District (District) are implementing the Napa River/Napa Creek Flood Protection Project (Project) along approximately 7 miles of the Napa River and 0.67 miles of Napa Creek in Napa County. The objective of the Project is to provide an economically feasible and environmentally sensitive method to protect the City of Napa from 100-year storm events.

The Project will achieve flood protection and habitat enhancement by using environmentally beneficial methods such as the creation of wetlands, marshplain and floodplain terraces, selective removal of existing levees and use of open space as the floodway, setback levees, bypass channels and biotechnical bank stabilization. Environmentally damaging measures such as deepening the river by excessive dredging will be avoided.

The Project was developed by a two year community-wide coalition process, which was coordinated by the District. The Community Coalition has been a cooperative process among a wide ranging group of stakeholders with diverse interests. This Community Coalition, with the assistance of the Corps, resource agencies staff, and outside consultants, developed the major concepts

in the Project to meet the dual objectives of reducing flood damage and maintaining and enhancing environmental quality. Through the Community Coalition, the “Living River Guidelines” were created. Appendix I-1 contains a copy of the “Living River Guidelines.” These guidelines contain geomorphic, habitat, and water quality objectives which were used to guide and evaluate design decisions for the Project.

Project Photographs:

Photographs of the Project are contained in Appendix I-2.

Section II. - Application for Grant Funding (Section 497.7)

Applicants for grant funding under the program shall file a complete application with the Department on a form prescribed by the Department. The Department shall not revise the application form during any period in which project proposals are being solicited. A complete application shall contain at least the following information:

a. A description of the proposed project including:

1. A statement of the problem being addressed.

The Napa River/Napa Creek Flood Protection Project is a joint effort between the District and the Corps that is designed to protect the citizens of the City of Napa, California and their property from devastating floods and also to enhance the natural environment by reconnecting the Napa River to its historical flood plain while creating new flood and marsh plain habitat.

Flood protection will be accomplished by creating additional flood flow capacity by removing old levees and constructing flood and marsh plain terraces, with new levees and floodwalls set back farther from the river channel. Old bridges will be replaced with higher and wider bridges. A "Dry Bypass" will be constructed as a key component of flood protection to allow flood waters to bypass an oxbow bend in the river in the central portion of the city.

2. A discussion of the ways that the project addresses the problem and satisfies the purposes described in Section 497.5(a)(2).

The Project has been developed by the Community Coalition and is based on the "Living River Strategy" for flood protection. The Project is implemented along approximately 7 miles of the Napa River, from the Butler Bridge (Highway 29) near Horseshoe Bend north to Trancas Street. Its major flood management components include the following:

- Lowering of dikes south of Imola Avenue, which would allow the Napa River to flow in a wider area, thereby increasing conveyance capacity and reducing upstream water surface elevations.
- Channel modifications to create flood terraces, which would create additional capacity along the river and lower water surface elevations, while also providing valuable wetland and upland habitat.
- Development of a "dry" bypass channel to bridge the Oxbow. This Bypass will allow low water flows to remain in the Oxbow, thereby maintaining the Oxbow's natural characteristics, but it will divert flood flows out of the Oxbow and on a more direct route through central Napa.
- New dikes, levees and floodwalls that will contain flood flows up to the 100-year flood event.

- Three pump stations that will remove water that would otherwise become trapped behind floodwalls and levees, and pump the water into the Napa River.
- Removal and replacement of a number of bridges in Downtown Napa. Replaced bridges would be designed with higher clearances to better pass flood flows.
- Recognizes and does not alter the authorized navigation channel that extends from San Francisco Bay up the Napa River to Third Street.

The Project also includes approximately two-thirds of a mile of channel modifications for Napa Creek between Napa River and Jefferson Street. Flood management features proposed on Napa Creek include installation of a dry bypass culvert between Jefferson and Seminary Streets, creation of a flood terrace through one-side overbank excavation between Seminary and Clinton Streets, installation of a new dry bypass culvert between Pearl and Main Streets, bank erosion protection, and removal of several existing bridges to contain flood flows up to the 100-year flood event within the banks of the creek.

To achieve the goals of the Project, acquisition of the following estates and areas described in Table II-1 below would be required.

Table II-1
Napa River Real Estate Requirements

Estate	Contract 1 (Acres)	Contract 2 (Acres)	Contract 3 (Acres)	Contract 4 (Acres)
Property Owners Public	2	4	2	1
Private	10	38	85	52
Recreation Easement*	3	3	3	
Channel Improvement Easement	20	3.4	6.7	5
Flood Protection Levee Easement	104	64	25	1
Temporary Work Area Easement (access)	3	12	15	3
Temporary Work Area Easement (Disposal Site)	80	39		
Permanent Disposal Site Syar Quarry Site	10			
Flowage Easement	418			

Acreage Rounded to nearest 1 acre

*Recreation trail to be acquired as non-standard recreation easement in lieu of fee.

3. A description of the project approach

The Corps will provide, in coordination with the District, written description of the anticipated real estate requirements for the Project. Thereafter, the District will furnish to the Corps all lands, easements, and rights-of-way, including suitable borrow and dredged material disposal areas, as may be determined by the Corps to be necessary for the construction, operation, and maintenance of the Project, and will furnish to the Corps evidence supporting the District's legal authority to grant rights-of-entry to such lands. The District is also responsible for utility relocations and bridge replacement.

When lands, easements, and rights-of-way are acquired, the Corps is responsible for all construction activities. The Project will be constructed in phases or contracts as are described in Table II-2 below. The construction schedule is contained in Appendix II-1 of this Application. Figure II-1 shows the locations of the construction contracts.

Table II-2
Napa River/Napa Creek Construction Contracts

Contract	Location	Stream Length (miles)
1A	Horseshoe Bend to Napa Yacht Club	2.02
1B	Kennedy Park to south of the Imola Bridge on the east side of the River	1.54
2W	West side of the River from the bridge at Imola Avenue to the Third Street Bridge	1.43
2E	East side of the River from the bridge at Imola Avenue to the Third Street Bridge	1.40
3	Third Street to Trancas Street	2.69
4	Napa Creek, from Jefferson Street to Napa River Outlet	1.43

The Corps is responsible for the operation, maintenance, repair, replacement, and rehabilitation of the Project for the first three years after the completion of construction. The District assumes that role beginning in the fourth year after completion of construction. Its primary responsibility is to preserve and protect, in perpetuity, the natural and riparian resource values of the mitigation lands created and enhanced by the Project.

4. A discussion of the expected outcome and benefits of the project

The expected outcome and benefits of the Project as described by the Corps are the following:

- To achieve 100-year level of flood protection;
- To provide flood damage benefits that exceed Project costs when calculated according to official Corps benefit-to-cost methodologies;
- To mitigate impacts to fish and wildlife from the Project; and

- To provide recreational facilities in the Project area.

The District shares these Project objectives. The District has also worked with the Community Coalition to develop several additional objectives for the Project at the local level. These objectives are:

- To attain an environmentally restored Napa River;
- To approach aesthetic and environmental excellence;
- To enhance opportunities for economic development;
- To secure a local financing plan that the community can support; and
- To comply with current or modified federal guidelines.

5. A description of the geographic boundaries of the project.

The Project area is located on the Napa River and Napa Creek in the City of Napa, California. Napa is located in northern California, approximately 45 miles north-northeast of San Francisco.

The Napa River drainage basin is located just north of San Pablo Bay between the eastern Howell Mountains and the western Mayacmas Mountains. The drainage basin is about 50 miles long on a north-south axis, ranges from five to ten miles in width and covers approximately 426 square miles.

The Napa River originates near Mount St. Helena, traverses the center of the basin, and empties into the Mare Island Strait which flows into the tidal marshlands and sloughs of San Pablo Bay. The relatively flat lands of the basin are centered about the river and consist of farm valley areas north of the city of Napa and tidal marshlands, reclaimed tidal lands and industrial areas south of the city.

The Napa River is navigable from San Pablo Bay to Third Street in downtown Napa. The river is sinuous throughout its course, and has a large oxbow area within the city of Napa. Tidal waters can extend through downtown Napa to Trancas Street. Many residential, business and industrial buildings are located along the Napa River within the city limits.

Napa Creek is a tributary to Napa River in the city of Napa. Its headwaters rise in the Mayacmas Mountains on the west side of the valley and flow southeasterly to discharge through a narrow, meandering channel into the Napa River south of the oxbow area. The Napa Creek drainage area is 14.9 square miles. The Project location and Napa River drainage basin are shown on Figures II-2 and II-2a.

The Project affects only those areas along the Napa River from the Highway 29/121 bridge over the Napa River at Horseshoe Bend north through downtown Napa to Trancas Street.

6. *Verification that the project is located at least partially in one of the qualifying areas listed in Section 497.5(a).*

Appendix II-2 contains a copy of the FEMA maps for the Project area, which demonstrates that the Project is located within a 100-year floodplain.

7. *A description and justification of any proposed use of program funds for flood control system or water system repairs performed as part of an easement program or a project developed or financed under the program (Water Code Section 79043).*

Program funds could potentially be used to repair breaches or flood control facilities as a result of the implementation of the Project. With the breach of the existing agricultural levee system in Contract 1A, a berm of approximately 5,800 linear feet was constructed to protect an existing vineyard. Additionally, Kennedy Park and Napa Valley Junior College in Contract 1B will have to be protected with a berm of approximately 6,000 linear feet from tidal flow and flood water which will extend to the existing bank. Additional flood control facilities where ongoing repair work may be needed will be identified as the Project is implemented.

8. *A demonstration that the project is technically feasible.*

The Project is being designed by the Corps and is being reviewed by a coalition of interested parties including U.S. EPA, Regional Water Quality Control Board, California Department of Fish and Game, National Marine Fisheries Service, U.S. Wildlife Service, and many other resources agencies. The District Board also appoints a Technical Advisory Panel consisting of civil engineers, hydrologists, and landscape architects to review the construction detail of the Project and make recommendations for conformance to the "Living River Strategy". The coalition has been active through the concept and design phases and continues review through construction.

9. *A hydrologic and hydraulic analysis prepared by a civil engineer registered pursuant to California law or a Professional Hydrologist-Surface Water certified by the American Institute of Hydrology.*

The Corps has prepared a General Design Memorandum (GDM), which presents the results of engineering and design studies conducted for the Project along with other analysis of the Project (i.e., cost and benefits, construction sequence, etc.). Appendix II-3 contains Chapters 15 and 16 of the GDM on hydrology and hydraulic design, respectively, of the Project. The GDM was certified by the Corps in 1998. Two hard copies of the complete GDM are provided with this Application.

As part of the GDM and with the ongoing design of the Project, the Corps has done Project modeling in conjunction with the District's hydrology consultant, Phil Williams and Associates (PWA). PWA, who developed the concept plan for

the creation of new and enhanced wetlands, also is involved in the review of the final construction plans of the wetland areas to confirm that these plans are on target with the concept plan.

10. A complete initial study environmental checklist as required by Section 15063(f), Title 1, California Code of Regulations, and if available a completed Environmental Impact Report or other environmental documentation as required by CEQA.

A copy of the summary of impacts and mitigation measures for the Project is contained in Appendix II-4. Two complete copies of the final Supplemental Environmental Impact Statement/Environmental Impact Report (SEIS/EIR) are included with this Application.

11. A list of required permits for the project and an implementation plan for their procurement.

The following permits have been obtained for the Project:

- Waste Discharge Requirements, Order Nos. 99-074 and R2-2002-0010 issued by the Regional Water Quality Control Board, San Francisco Bay Region (See Appendix II-5).
- Site Cleanup Requirements, Order No. 01-066 issued by the Regional Water Quality Control Board, San Francisco Bay Region (See Appendix II-6).
- NPDES, Permit No. CAG912002 issued by the Regional Water Quality Control Board, San Francisco Bay Region.
- Memorandum of Understanding by and between Napa County Flood Control and Water Conservation District and California Department of Fish and Game, No. 1802-2002-010-03 (See Appendix II-7).
- 1601 Lake and Streambed Alteration Agreement, Notification Nos. 2000-0427, R3-2001-0799, R3-2002-0259.
- U.S. Fish and Wildlife Service Permit for the Sacramento Splittail and Delta Smelt.
- National Marine Fisheries Service Permit for the Steelhead trout.
- Storm Water Pollution Prevention Program Permits for construction work.

Other necessary permits will be obtained as construction progresses by following normal application procedures.

b. Maps and drawings as necessary to describe the project, including:

1. A vicinity map.

Figures II-1 through II-2a show the location of the Project, the Napa River and the basin, and construction contract locations.

2. A map indicating location of project features and boundaries of affected property.

3. Drawings or sketches of project features as necessary to describe them.

Figures II-3 through II-9 identify the location of the Project and Project features. Figures II-10 through II-16 identify the real estate requirements.

c. A financial summary including:

1. The estimated cost of the project broken down by task.

Lands and Damages	$86,549,000
Relocations	45,155,000
Roads, Railroads and Bridges	8,618,000
Channels and Canals	42,401,000
Levees and Floodwalls	18,898,000
Pumping Plants	12,229,000
Recreation Facilities	1,054,000
Cultural Resource Preservation	507,000
Engineering and Design	33,323,000
Construction Management	7,166,000
TOTAL	**$255,900,000**

2. The estimated flood control benefits of the project.

When the Project is in place, it is expected to create annual savings of $20.9 million in avoided property damage, according to the Corps formula. Further, the savings from reduced insurance costs, the avoided cleanup and emergency costs, and enhanced environmental improvements bring the annual savings to $26 million for Napa County residents.

3. The amount of the grant requested.

$5 million

4. The estimated amount to be funded by the applicant.

The approximate amount funded by the District is $128 million.

5. Identification of any other parties contributing to the cost, and the amounts and activities to be funded by them.

The Corps contributes to the cost of the Project and the approximate amount to be funded by them is 50% of the total Project costs, or approximately $128 million. The Corps' responsibilities for the Project are discussed in Section II.a.3. of this Application.

d. A summary of proposed property acquisition rights including:

1. Identification of each property.

2. Names, addresses and telephone numbers of the property owners and lessees or tenants.

3. The type of property rights to be acquired (such as easement or fee title).

Appendix II-8 contains the proposed property acquisitions for the Project. The Appendix identifies the parcel number (APN NO.) in lieu of addresses, name of property owners and tenants, and property rights to be acquired (easement or fee). To date, property acquisition in Contracts 1, and 2 East has been completed. Property acquisition in Contract 2 West is in progress. The Corps has not submitted to the District the final real estate and areas for Contracts 3 and 4 (See Appendix II-1 for the detailed schedule).

4. Evidence that affected landowners are willing participants in any proposed real property transactions.

Currently, the District has acquired properties either from willing sellers or through eminent domain process in Contracts 1 and 2 East of the Project. Acquisition of properties in Contract 2 West has begun with properties being acquired from willing sellers. Because the Project is being conducted in phases, negotiations with property owners will not be initiated at least a year or two prior to construction. It is likely that future property acquisitions will be acquired from willing sellers. The District acknowledges and intends that any funds acquired through this Application would be only used for acquisition of property from willing sellers.

5. A justification of any proposed acquisition of fee interest in property to protect or enhance a flood protection corridor or floodplain while preserving or enhancing agricultural use (Water Code Section 79037(b)(1)) which includes:

a. Reason for the fee title acquisition.
b. Alternatives considered to fee title acquisition for each property.
c. Proposed final disposition of the property.
d. Effect on county property tax revenue.

This is not applicable. The Project acquires fee interests for the purposes of flood protection and wildlife and habitat enhancements. The Project does not preserve or enhance agricultural uses.

e. A tentative work plan for the project including:

1. A timetable for execution of the project.

2. A task breakdown for the project.

Appendix II-1 contains the schedule including the specific tasks for the Project.

3. A description of how services of the California Conservation Corps, or local community conservation corps will be used in the project.

The District currently has a contract with the California Conservation Corps (CCC) for their services. CCC performs activities such as vegetative planting, restoration, and erosion monitoring related to the Project. Their services will expand as additional tasks are being identified.

f. A list of names and addresses of owners of all property interests in parcels adjacent to those for which acquisition of property rights is proposed.

A list of names and addresses of property owners adjacent to those parcels for which acquisition is proposed will be provided prior to the public hearing.

g. *If property rights are to be acquired for the project, or if a need is indicated in environmental review documentation prepared for the project pursuant to CEQA, a plan to minimize the impact of the project on adjacent property owners, including but not limited to the following (Water Code Section 79041):*
   (1) An evaluation of the impact on floodwaters.
   (2) The structural integrity of affected levees.
   (3) Diversion facilities.
   (4) Current and historic agricultural practices on the project site and in the vicinity.
   (5) Timber extraction operations.
   (6)An evaluation with regard to maintenance.

The Corps' General Design Memorandum (GDM) presents the results of engineering and design studies conducted for flood control improvements along the Napa River. The design and studies contained in the GDM were conducted to determine the most economical plan for conveying the computed 100-year event, minimizing environmental impacts, and meeting applicable government

standards for the flood control improvements. Appendix II-3, as discussed previously, contains sections of the hydrology and hydraulic studies from the GDM that were done for the Project.

Appendix II-9 contains Chapter 9 of the GDM which evaluates the maintenance related to the Project. Additional maintenance activities for the Project are required by the Waste Discharge Requirements issued by the RWQCB.

h. A description of the input and participation that local groups and affected parties provided in the preparation of the work plan and application.

Due to numerous comments from citizens and resource protection agencies regarding previous flood protection plans proposed by the Corps, the District and local groups created a community-wide coalition to foster community consensus regarding Project design. This Community Coalition, with the assistance of outside consultants, resource agency personnel, City and County staff and the Corps, developed the major concepts in the Project to meet the dual objectives of flood damage reduction and environmental quality and to eliminate the primary concerns related to the previous flood protection proposal. The Community Coalition process has been one of unprecedented cooperation between large numbers of individuals and interest groups, and has resulted in a Project that enjoys wide-ranging support.

The design of this Project has been a collaborative effort between the City of Napa, Napa County, the Corps, the Community Coalition, State and Federal resource agencies, and consultants. The Project is intended to meet the needs of all parties, whether they are for preservation of the environment, enhanced scenic values, reduced local service interruptions, or satisfaction of hydraulic constraints.

i. A statement relative to the use of a trust fund for maintenance, or any proposed alternative, as specified in Water Code Section 79044.

The District intends to create a trust fund for maintenance or any proposed alternative as specified in the Water Code, Section 79044 in order to meet the requirements of the grant.

j. Either or both of the following, depending on applicability:

1. An analysis of the project benefits to wildlife habitat.

The implementation of the Project will have an overall positive impact on fish and wildlife habitat in the Napa area by the creation of new habitat area as described below:

- Creation of 160.7 acres of emergent tidal marsh (56 acres marshplain terraces/104 acres South Wetlands Opportunity Area (SWOA));
- Creation of 56.2 acres of seasonal wetland (45 acres floodplain terrace/11.2 acres SWOA);
- Creation of 2.5 acres of tidal mudflat (riprap removal, marshplain terraces);
- Creation of 30.95 acres of riparian habitat (throughout the Project);
- Conversion and enhancement of 262 acres of diked and grazed seasonal wetlands to high value emergent tidal wetlands (SWOA);
- Enhancement of 136 acres of diked and grazed seasonal wetland (Stanley Ranch). This land will be maintained and managed for seasonal wetland values;
- Creation of 11 acres of woodlands; and
- Enhancement of 72 acres of uplands adjacent to wetlands.

In summary, this Project will create 217 acres of tidal and seasonal wetlands, and enhance 398 acres of wetlands and 72 acres of uplands contiguous to wetlands.

2. A description of project actions to preserve agricultural land.

This is not applicable.

k. A statement of qualifications for the project team.

Members of the Project team are identified as follows:

<u>Heather Stanton – Project Manager with the District</u>
Education: B.A. in Political Science
Experience: 25 years in government service, experience includes: coordinate seven major state and federal resource agencies, city of Napa, Army Corps of Engineers and District activities; responsible for securing all necessary approvals and permits for implementation of the Napa Flood Project; director of the Community Resources for the City of Napa for 10 years.

<u>Jon Lander – Principal Engineer with the District</u>
Education: B.S. in Civil Engineering, M.S. in Public Administration
Experience: 6 years with Caltrans; two years with a building contractor managing construction projects, bidding work and design of turnkey projects; 21 years in 3 separate agencies as a municipal engineer in newly incorporated communities that required the setup of new public works capability and public service levels; and 5 years in flood control engineering.

Richard Thomasser - Senior Project Analyst (Consultant to the District)
Education: B.S. in Geology
Experience: 17 years in environmental consulting; work experience includes remedial action of hazardous wastes sites, hydrogeology, management of environmental construction projects and project management and planning.

Daisy Lee – Senior Flood Project Analyst with the District
Education: B.A. in Biology
Experience: 11 years in hazardous waste management; and two years with the District in overseeing remediation, soil disposal, environmental issues, and land acquisition.

Karen Gratton – Office Manger/Accounting Specialist
Education: A.A. in Accounting
Experience: 4 years with the District in developing and monitoring accounting systems and procedures for fiscal control and conformance with federal, state and local guidelines, prepare and administer budget and financial statements and handle related audits, analyze cash flow needs through preparation of revenue and expense projections; 6 years as an accountant in the health care industry (hospital) with work related to auditing and reporting, prepared budget and financial statements, performed cash management; and 3 years with work related to payables, payroll, receivables, credit department and general ledger.

Larry Dacus - Project Manager with the Corps
Education: B.S. and M.S. in Civil Engineering
Experience: 28 years of service in civil works with the Corps of Engineers. Work experience includes 8 years as a hydraulic engineer, 5 years as a water resources planner, 2 years as a program manager, and 13 years as an engineering and project manager.

Will Hall - Civil Designer with the Corps
Education: B.S. in Civil Engineering
Experience: 12 years of experience with the Army Corps of Engineers with job assignments in construction management and flood management facility design.

James Weir - Civil Designer with the Corps
Education: B.S. in Civil Engineering
Experience: Has over 25 years experience with the Army Corps of Engineers with job assignments in military and flood management facility design.

Don Twiss - Hydraulic Engineer with the Corps
Education: B.S. in Civil Engineering
Experience: 25 years of experience in hydrodynamic multi-dimensional numeric modeling, sediment engineering, stream restoration, fluvial geomorphology, sedimentology, and hydraulic structure design. Work as a design team leader with the Resource Conservation Service 10 years and as a hydraulic engineer with the Army Corps of Engineers for 15 years.

Jane Rinck - Environmental Resources with the Corps
Education: B.A in Environmental Studies
Experience: 16 years of civil works and military experience as a biological sciences environmental manager with the Army Corps of Engineers. Work experience includes managing and preparing EIS/EIR's, EA's, and other environmental studies and documents to ensure compliance with environmental laws and regulations.

l. A written statement by an attorney certifying that the applicant is authorized to enter into a grant agreement with the State of California.

A written statement by the District's County Counsel is contained in Appendix II-10.

III. - Minimum Qualifications

Project proposals that do not meet the minimum qualifications will not be accepted.

A. The project proposes to use any granted funds for protection, creation, and enhancement of flood protection corridors *[Water Code Section 79037(b)]*.

B. A local public agency, a non-profit organization, or a joint venture of local public agencies, non-profit organizations, or both proposes the project *[Water Code Section 79037(a)]*.

C. The project will use the California Conservation Corps or a community conservation corps whenever feasible *[Water Code Section 79038(b)]*.

D. If it is proposed to acquire property in fee to protect or enhance flood protection corridors and floodplains while preserving or enhancing agricultural use, the proponent has considered and documented all practical alternatives to acquisition of fee interest *[Water Code Section 79039(a)]*.

E. Holders of property interests proposed to be acquired are willing to sell them *[Water Code Section 79040]*.

F. If it is proposed to acquire property interests, the proposal describes how a plan will be developed that evaluates and minimizes the impact on adjacent landowners prior to such acquisition and evaluates the impact on the following *[Water Code Section 79041]*:

- Floodwaters including water surface elevations and flow velocities.
- The structural integrity of affected levees.
- Diversion facilities.
- Customary agricultural husbandry practices.
- Timber extraction operations.

The proposal must also describe maintenance required for a) the acquired property, b) any facilities that are to be constructed or altered.

G. The project site is located at least partially in one of the following:

1. A Federal Emergency Management Agency (FEMA) Special Flood Hazard Area (SFHA), or

2. An area that would be inundated if the project were completed and an adjacent FEMA SFHA were inundated, or

3. A FEMA SFHA, which is determined by using the detailed methods identified in FEMA Publication 37, published in January 1995, titled "Flood Insurance Study Guidelines and Specifications for Study Contractors", or

4. A floodplain designated by The Reclamation Board under Water Code Section 8402(f) *[Title 23, California Code of Regulations, Division 2, Section 497.5(a)],* or a

5. Locally designated Flood Hazard Area, with credible hydrologic data to support designation of at lease one in 100 annual probability of flood risk. This is applicable to locations without levees, or where existing levees can be set back, breached, or removed. In the latter case, levee setbacks, removal, or breaching to allow inundation of the floodplain should be part of the project.

I, Heather Stanton, Project Manager of the Napa River/Napa Creek Flood Protection Project (Project), have read the minimum qualifications, Section III A – G, outlined above and certify that the Project meets the minimum qualifications as stated above.

_____

Heather Stanton
Project Manager

Section IV. - (340 points) Flood Protection Benefits

A. Existing and potential urban development in the floodplain (50)

1. *Describe the existing and potential urban development at the site and the nature of the flood risk.*

The Napa River Flood Protection Project is being implemented along 7 miles of the Napa River from Highway 29 to Trancas Street. Almost all of the land adjacent to the Napa River through the City of Napa as well as the Napa Creek, a tributary to the Napa River, has been developed for residential and industrial/commercial uses, and is subject to flooding. The hardest hit areas of flooding are in the central portion of Napa, in and surrounding the downtown area, where both dense commercial and residential development exists. Within the Project boundaries there are several parcels of undeveloped land with potential for development. The downtown area is also undergoing a surge of redevelopment. The financing and investment potential for such development depends of the completion of the Project.

Development within much of the area to be protected by the Project is currently limited due to FEMA and City of Napa restrictions because of the present flooding potential. Upon completion of the Project, the areas within the revised 100-year flood protection boundary will be certified.

2. *How often has flooding occurred historically?*

Numerous damaging floods have been recorded since 1862 on the Napa River. Seven major floods are documented to have occurred between 1862 and 1900. The 14 most recent serious floods occurred in 1942, 1943, 1955, 1962, 1963, 1965, 1967, 1973, 1978, 1982, 1983, 1986, 1995 and 1997. The February 1986 flood was estimated to have been a 35-year event. The flood resulted in three people dead, 27 injured, 5,000 evacuations, 250 homes destroyed, and another 2,500 residences damaged county wide, totaling $100 million in damages. The most recent flooding occurred on December 16, 2002 when Napa Creek spilled over its banks and flooded 100 structures (both commercial and residential) in downtown Napa. This most recent flooding event has caused an estimated $1 million dollars in damages.

3. *Discuss the importance of improving the flood protection at this location. Include the number of people and structures that are affected by the flood hazard, and the flood impacts to highways and roads, railroads, airports and other infrastructure, and agriculture.*

With a long history of flooding disasters in Napa County resulting in the loss of lives and livelihoods and property damages exceeding $542 million during the past 36 years of flooding, implementation of this Project is the utmost importance to the Napa County residents. Based upon the most up-to-date projections, future floods in the Napa County will cost a total of $1.6 billion over

the next 100 years. By nullifying these expenditures, the Project, including all yearly maintenance costs, will save the community a projected $20 million annually in today's prices. Over the life of the Project, for every $1 spent on flood protection, Napa City residents will receive a projected $7 in savings on property damage alone. Associated benefits of the Project include:

- Avoiding the unemployment and lost business revenue which traditionally accompany floods;
- Savings in annual flood insurance for the entire region;
- Property value enhancement throughout the Project reach;
- Continued tourist income during flood events; and
- Improvement of health and safety by increasing access to the urban areas of Napa.

Therefore, the Project will have a positive benefit-to-cost ratio under the Corps' calculation. One billion dollars in damages will be saved over the useful life of the Project.

In March 1998, Napa County residents approved "Measure A" which imposed a half-cent local sales tax to help fund the Project. The Project will protect over 7,000 people, and over 3,000 residential/commercial units from the 100-year flood event on the Napa River and its main tributary, the Napa Creek.

Figures IV-1 and IV-2 show the 100-year Pre-Project floodplain areas, and the 100-year floodplain areas at the completion of the Project, respectively.

B. Flood damage reduction benefits of the project (100)

1. *Does the proposed project provide for transitory storage of floodwaters? What is the total community need for transitory storage related to this water course and what percentage of the total need does this project satisfy? What is the volume of water and how long is it detained?*

The Project will provide transitory storage of floodwaters by means of the excavated marshplains and floodplains, the lowering of existing dikes, and detention basins (see below for a more detail discussion of these flood reduction elements). The excavated marshplains and floodplains will add over 600 acre feet of storage that can be utilized during flooding. The Corps has modeled the storage of floodwater in the completed Project to be similar to the transitory storage that now occurs by City flooding.

2. *Describe any structural and non-structural flood damage reduction elements of the project. (Examples of structural elements are levees, weirs, detention/retention basins, rock slope-protection, etc. Examples of non-structural elements are acquisition of property for open space, acquisition of land for flood flow easements, transitory storage, relocation of structures and other flood prone development, elevating flood prone structures, flood proofing structures, etc.)*

There are both structural and non-structural flood damage reduction elements of the Project. The following elements are non-structural in nature:

- Marshplain Terraces – A marshplain terrace, also called a tidal terrace, would be excavated in many areas directly adjacent to the Napa River, recreating the tidally influenced marshplain that was once adjacent to the Napa River. Because the Napa River is influenced by the tidal systems of the San Francisco Bay, it experiences changes in water elevation during the high and low tides. The excavation of this land directly adjacent to the banks of the Napa River would allow for the daily submergence of these lands and the provision of tidal mudflat and wetland habitat. The marsh plain terrace would be excavated to an approximate elevation of 0.7 NGVD, which is the mean tide level. The marshplain terrace would also have a very slight slope downwards to the river. The purpose of this slope is to provide slightly varied hydrologic regimes for wetland plants.

- Floodplain Terraces – Beyond the marshplain terrace, a second "floodplain terrace" would be excavated at elevation 4 NGVD in many areas. This terrace would be at an elevation that would flood approximately every 2 years, thereby providing room for flood flows from larger flood events. This terrace would have some minor variation in topography which would also allow for it to be maintained as a mosaic of restored upland and seasonal wetland habitat. In Kennedy Park, it would also be used to create diverse habitat conditions for environmental education and interpretation.

- South Wetland Opportunity Area (SWOA) – The SWOA consists of 104 acres of emergent marsh, 262 acres of emergent marsh, 11 acres of seasonal wetlands as well as 136 acres of enhanced wetlands.

- Lowering of Existing Dikes – Dikes along the west side of the Napa River in the area around and north of Horseshoe Bend up to the new marina were lowered. Dikes along the river that are perpendicular to the floodplain and connect to the oxbow lake were also lowered. Lowering of the dikes has created more frequent flooding on nearly 900 acres of land in this area. Two breaches in the dike in this area also facilitate drainage.

- Gasser Detention Basin – A pump station will be installed on the Gasser property to maintain and enhance the existing seasonal wetlands' current capacity for storm water detention (i.e., this is not a constructed detention basin). There are currently 8.5 acres of jurisdictional wetlands, and 1-acre of mitigated wetlands that comprise the detention basin.

- Bank Stabilization and Protection – Bioengineered methods will be used to stabilize and protect the banks. These methods would optimize habitat development and other environmental benefits. In some cases, only vegetation will be used, designed and installed specifically to provide strength to the banks. In other cases, a mixture of rip rap and vegetation will be used. In cases where the highest erosive forces are present and important structures are located close to the river or creek, rip rap will be used in conjunction with habitat enhancing elements, such as root wads and lunkers.

The structural elements of the Project include the following:

- Napa River Dry Bypass – A dry bypass would be constructed in the vicinity of the Oxbow immediately east of downtown Napa. The dry bypass would divert high flood flows out of the Oxbow, while still allowing normal flows in the Oxbow during lower flow times. When not utilized for flood conveyance purposes, the Bypass would provide open space and recreation opportunities in the downtown area. The bypass channel would be 1,300 feet in length, with a channel bottom width varying from 200 to 300 feet. The sides of the Bypass would be treated with special materials and finishes. Its southeast side, and the northwest side from Napa Creek to the new Soscol Avenue Bridge, would have banks with 2.5:1 slopes covered with articulated concrete block. This block has openings that would be filled with soil and seeded with grass. There would be a levee above the bypass banks setback 25 feet from the top of the channel. The northwest side of the Bypass upstream of the new Soscol Avenue bridge would require a vertical wall, which would be faced with special materials for appearance. The wall would extend four feet above the top of channel, creating a total wall height of about ten feet from the channel bottom. The bottom of the Bypass would be surfaced with a combination of turf-reinforced geotextile and paving.

- Training Dikes – Training dikes are small engineered embankments that do not provide 100-year flood protection but are intended to maintain the amount of flood protection that currently exists in a given area. Such dikes would be built along Kennedy Park from about Station 637+00 to Imola Avenue on the east side of the Napa River. On the west side, a dike is to be constructed to protect an

existing vineyard from tidal flow in the SWOA.

- Levees – Levees are earth embankments that are intended to provide 100-year flood protection. Some of the existing levees would be raised.

- Floodwalls – Floodwalls are walls built on top of the land beyond the river banks. They would be built of concrete, with aesthetically designed facings. These floodwall facings in urban and residential areas would have textured finishes. They would generally be one to five feet taller than the adjoining land, with most walls in the range of two to four feet above grade.

- Near-Vertical Walls – These are walls extending from the channel bottom to the top of bank. These walls would be in a highly visible and extremely populated urban corridor and would, therefore, have facades to provide aesthetically designed facings.

- Pump Stations – Three pump stations would be constructed to pump local drainage from protected areas behind floodwalls and levees into the Napa River. The new floodwalls and levees would have the tendency to trap run-off that would otherwise enter the river in developed areas; the pumps would be used to pump this water that can not drain by gravity during floods over the walls and levees into the river. Each pump station would consist of a one-story building with dimensions of approximately 40 feet by 50 feet. The buildings would hold three to four individual pumps, which would be powered electrically with diesel generator back-ups. The pumps would be sized to meet the needs for internal drainage in their individual locations.

- Detention Basins – Detention basins will be created to provide storage to reduce peak pumping rates to the river. Each pump station will have associated detention. One detention basin would be about 200 feet by 600 feet in size, with a capacity of about 18 acre- feet. Its bottom and sides may be surfaced with grass, which would make it possible to use it as a playing field during dry periods. During storms, it would be closed so that it could safely function as a detention facility. It would harbor some standing water during and after storms, although it would be drained after flood conditions pass. One of the detention basins is associated with the Gasser wetland discussed above as a non-structural element as this area functions as a detention basin in its current state.

- Bridges – A number of vehicular and pedestrian bridges will be removed and replaced in downtown Napa. Replaced bridges would be designed with high clearances to better pass flood flows and lengthened to span over marshplains. Two railroad bridges will be

replaced and one new one constructed over the new bypass channel. One state highway (Route 121) bridge is being replaced. Two city street bridges (First and Third Streets) are being replaced and a new bridge (Soscol) over the bypass channel is being constructed. Two city street bridges are being removed (Coombs and Behrens Streets). Three new pedestrian bridges will be constructed and another will be replaced.

3. *By what methods and by how much dollar value will the project decrease expected average annual flood damages?*

Flood control methods are discussed previously. The implementation of the Project will protect 2,700 homes, 350 businesses, and over 50 public properties from 100-year flood levels. This amounts to a savings of $26 million annually in flood damage costs.

4. *How does the project affect the hydrologic and hydraulic conditions at the project site and adjacent properties?*

By widening the flood channel, the hydraulic conditions can be maintained within the river corridor. Adjacent properties will then be protected behind flood protection structures. Appendix II-3 contains a detailed discussion of the Project hydrology and hydraulic design.

a) *Will the project reduce the magnitude of a flood flow, which could cause property damage and/or loss of life?*

The Project will control the flood flow within safe passage structures as described above. By containing the flow, property damage and threat to human life will be greatly reduced.

b) *What are the effects of the project on water surface elevations during a flood event which could cause property damage and/or loss of life?*

Removal and/or replacement of structures (i.e., bridges) that currently restrict the flow will lower the water surface in some areas but containment is still required with wall/levees to protect properties. The location of levee and flood wall superiority is set to preclude induced flooding within the Project reach. Additionally, the excavated marshplains and floodplains will allow for more transitory storage of flood water.

c) *How are flow velocities impacted by the project during a flood flow which could cause property damage and/or loss of life?*

The wider channel provides for little change in the flow velocities. Modeling indicates that up and down stream of the Project show negligible change in velocity.

C. Restoration of natural processes (60)

1. *Describe how any natural channel processes will be restored (for example: for channel meander, sediment transport, inundation of historic floodplain, etc.) and describe how these natural processes will affect flood management and adjacent properties.*

The Napa River channel will be restored to its natural process by creating marshplain and floodplain terraces. The marshplain will be constructed by lowering the existing river banks to an elevation approximately equal to mean tide. The terrace will be sloped towards the river to provide varying hydrologic regimes for tidal wetlands plants. This terrace will create 56 acres of emergent tidal marsh wetlands and 2.5 acres of tidal mudflats. Emergent tidal marsh will be created in a continuous linear band on the eastside of the river for approximately 2.6 miles, with a width ranging from 100 to 150 feet. A transition zone between the marshplain and floodplain terrace will be constructed and vegetated with riparian species. The floodplain terrace starting elevation will vary from downstream to upstream. 45 acres of seasonal wetlands will be established on the floodplain terrace. The Project will also include the lowering of existing dikes, breaching of existing levees, and setting back some of the levees.

These design features will increase and improve flood flow conveyance, and will provide 100-year flood protection for the City of Napa.

2. *Describe any upstream or downstream hydraulic or other effects (such as bank erosion or scour, sediment transport, growth inducement, etc.).*

The Project is designed to be neutral at the Project boundaries. Sediment transport studies have been completed, and velocities modeled with no identified effects.

3. *If the project includes channel modification or bank protection work, will riprap or dredging be part of the design? If so, provide an analysis of potential benefits and impacts.*

The Project has been designed to minimize the amount of bank stabilization required because of the geomorphic approach as well as setting back of floodwalls and levees. However, there are still reaches where the line of protection (levees and floodwalls) could not be adequately set back from the banks, and are subject to high velocities and erosive forces. In these reaches uncontrolled erosion would have the potential to destroy the line of protection and prevent the Project from performing as designed. Therefore, erosion protection is required in these reaches. The protection would incorporate bioengineering methods which would optimize habitat development and other environmental benefits. This allows the stabilization to be “softened” and also helps to mitigate for riparian vegetation affected by the Project in other locations. The use of biotechnical measures requires dedicated inspection and maintenance of these features and therefore, a monitoring plan for bank stabilization will be prepared

as part of the overall Monitoring and Mitigation Plan for the Project. Dredging will occur on the average of once every eight years.

D. Project effects on the local community (60)

1. How will the project impact future flooding on and off this site?

The Project, which is a geomorphically-based channel design, balances 100-year flood protection goals for the City of Napa while maintaining and enhancing the rivers' natural processes and features, including the restoration of floodplain-main channel interaction and riparian and tidal marsh habitats.

2. How will the project affect emergency evacuation routes or emergency services and demands for emergency services?

Controlling the flooding within structural and non-structural features and raising bridges above the flood waters will restore emergency evacuation routes during flood events. Presently the City is divided by flood events and there are no passable routes across the river in a major storm event.

3. Explain how the project will comply with the local community floodplain management ordinance and the floodplain management criteria specified in the Federal Emergency Management Agency's National Flood Insurance Program (FEMA's NFIP).

The City of Napa is currently an active participant in the NFIP. Completion of the Project will allow the removal of most of the structures in the City from the FEMA floodway. Construction of initial segments of the Project has removed a number of structures that have previously been flooded. These businesses and residences were relocated from the existing floodway as well.

E. Value of improvements protected (70)

1. What is the assessed value of structural improvements that will be protected by the project?

The Project will provide flood protection for about 2,500 homes, 350 businesses and over 50 public properties. The average home sold for $306,957 in the City of Napa in 2001. If you apply that average to the 2,500 homes and 350 businesses, total value of the homes and businesses is approximately $874,827,000.

The pubic properties are more difficult to quantify. An estimate can be made by taking total City of Napa assets of $135 million and applying a percentage equal to that of the homes protected to the total number of residences within the City limits. This calculation would look as follows:

Total City Assets	**$135,660,000**
Total Residences within the City limits	26,300
Total Residences directly protected	2,500
2500/26300 = 0.095% x $135 million =	$12,887,000

Added together, the value of the structural improvements protected is approximately $887.7 million.

2. *What is the estimated replacement value of any flood control facilities or structures protected by the project?*

None.

Section V. - (340 points) Wildlife and Agricultural Land Conservation Benefits

Proponent should provide a statement of the relative importance of the project's wildlife and agricultural land conservation benefits. DWR will use the statement and all other project materials to assign a fraction of the total benefits to each type (wildlife (F_w) or agricultural land conservation (F_a)) so that the fractions total unity. Actual points scored for each type of resource will be multiplied by the respective fraction for each resource, and the wildlife and agricultural scores resulting for each type of resource will be added together.

A. (340xF_w points) Wildlife Benefits

Habitat values refer to the ecological value and significance of the habitat features at this location that presently occur, have occurred historically, or will occur after restoration.

Viability refers to the site's ability, after restoration if necessary, to remain ecologically viable with minimal on-site management over the long-term, and to be able to recover from any natural catastrophic disturbances (fire, floods, etc.).

A1. Importance of the site to regional ecology (70)

1. *Describe any habitat linkages, ecotones, corridors, or other buffer zones within or adjacent to the site. How are these affected by the project*?

The Napa River ecosystem consists of a freshwater riverine system in the upstream reaches and an estuarine system in the downstream reaches. The boundary between these two systems is located within the Project reach between Trancas Street and Kennedy Park, and varies seasonally.

The Napa River and its tributaries serve as a linear wilderness running through the heart of an intensively farmed and partially urbanized valley. At one time, a dense canopy of riparian habitat dominated by cottonwoods and willows lined the Napa River along much of its upper reaches. The lower reaches included native marshes and grassland that has been replaced by pastures, agriculture or other industrial uses.

For the most part, the gallery forest bordering the riparian zone is gone, with most of the remaining vegetation restricted along the channel. Within the City of Napa, the riparian forest grades into areas of riparian scrub/shrub and herbaceous vegetation with small patches of brackish marsh. Concrete rubble or rock riprap are mixed with various plants and shrubs above the tidal zone. Downstream of Napa, oak and mixed woodland occasionally line the banks, and diked pasture land (historic wetlands) and tidal marsh flanks the river to its mouth at San Pablo Bay.

The implementation of the Project will have an overall positive impact on fish and wildlife habitat in the Napa area. Minor losses will occur in both wetland and woodland areas and are summarized as follows:

- 7.32 acres of tidal wetlands;
- 44 acres of diked, grazed, and farmed seasonal wetlands;
- 0.3 acres of tidal mudflats; and
- 8.40 acres of riparian forest, riparian scrub-shrub, and shaded riverine aquatic cover.

These losses will be caused by construction of floodwalls and levees/berms, excavation to create marshplain and floodplain terraces, stabilization of bank slopes, and disposal of excavated materials. These impacts, however, will be fully mitigated and supplemented by the creation of new habitat area as described below:

- Creation of 160.7 acres of emergent tidal marsh [56 acres marshplain terraces/104 acres South Wetlands Opportunity Area (SWOA)];
- Creation of 56.2 acres of seasonal wetland (45 acres floodplain terrace/11.2 acres SWOA);
- Creation of 2.5 acres of tidal mudflat (riprap removal, marshplain terraces);
- Creation of 30.95 acres of riparian habitat (throughout the Project);
- Conversion and enhancement of 262 acres of diked and grazed seasonal wetlands to high value emergent tidal wetlands (SWOA);
- Enhancement of 136 acres of diked and grazed seasonal wetland (Stanley Ranch). This land will be maintained and managed for seasonal wetland values;
- Creation of 11 acres of woodlands; and
- Enhancement of 72 acres of uplands adjacent to wetlands.

In summary, the Project will impact 51.32 acres of emergent tidal marsh and seasonal wetland, but 217 acres of tidal and seasonal wetlands will be created, and 398 acres of wetlands and 72 acres of uplands contiguous to wetlands will be enhanced by the Project.

Prior to the Project, the seasonal wetlands were diked, grazed, and hay cropped. They existed as a mosaic of seasonal wetlands and uplands, and were isolated from the river except during very high flow flood events. The emergent tidal marsh was predominantly fragmented without a linear connection along the river. The Project, however, has created and enhanced the wetlands so that they are now high value emergent tidal, seasonal and riparian wetlands. There is now a high degree of connectivity between the river, emergent tidal wetlands, seasonal wetlands, riparian forest and upland areas.

Wetland and riparian forest/scrub-shrub will be created in four main areas: 1) marshplain terraces; 2) floodplain terraces; 3) transition zones between marshplain and floodplain terraces; and 4) the SWOA.

2. Is the site adjacent to any existing conservation areas?

There are two areas, the South Wetlands Opportunity Area (SWOA) and the Gasser Property, which are wetland/habitat conservation areas and are part of the Project.

South Wetlands Opportunity Area (SWOA) The SWOA as shown in Figure V-1 was created as part of the Project. Figure V-2 shows the SWOA in the Pre-Project condition. The SWOA is comprised of 835 acres and extends from the Newport North Marina to the Highway 29 bridge on the west side of the river. The SWOA has restored brackish emergent marsh, seasonal and emergent wetlands, tidal mudflats, and high-value oak woodland. Diked baylands have been converted to a mosaic of wetland habitat types with associated functions and values. The following Project design elements were implemented in the SWOA:

- A marshplain terrace at mean tide level (MTL), extending approximately 5,000 feet downstream from the Newport North Marina, with a total area of 8.7 acres;
- A floodplain terrace adjacent to the marshplain terrace at the dominant discharge water surface elevation, with a total area of 29 acres;
- Lowering of levees adjacent to the river downstream of the terraces to a finish elevation of 6 feet NGVD. Lowering of levees surrounding Horseshoe Bend to a finish elevation of 5 feet NGVD;
- Disposal of excavated soil over an approximately 56-acre area in the northwestern corner of the area, and construction of a dike in the same area to protect upland areas;
- Breaching of dikes at two locations to restore tidal action. One location is on the southwestern portion of Horseshoe Bend, and the other is west of station 520+00;
- Conversion of those agricultural/grazing lands on the 210-acre Stanly Ranch property that are not considered seasonal wetlands to high-value oak woodlands through the planting of oaks and other native species. Existing seasonal wetlands on the Stanly Ranch site were maintained;
- Conversion of all 78 acres of Horseshoe Bend Island (57 acres of existing seasonal wetlands) to brackish emergent marsh sustained by a tidal slough channel. Conversion occurred through excavation of an inlet breach at the location of the existing tide gate in the southwestern corner of the island. The tidal slough channel created approximately 2 acres of open water/tidal mudflat below MTL;

- Conversion of all 574 acres north of Horseshoe Bend (including 306 acres of existing farmed seasonal wetlands) to 425 acres of brackish emergent marsh, 133 acres of high-value oak woodlands in upland areas, and 16 acres of open water/tidal mudflat. The brackish emergent marsh is supported by a network of tidal slough channels originating from the northern edge of Horseshoe Bend where the existing drainage enters. The tidal slough network created open water/tidal mudflat below MTL. Establishment of high-value oak woodlands; and
- Elimination of grazing in all conversion areas identified above.

Gasser Property The Gasser property is comprised of 55 acres and is located immediately east of the Napa Valley Wine Train tracks, north of new Tulocay Creek, south of Oil Company Road, and west of Soscol Avenue (see Figure V-3). The site supports approximately 8.5 acres of jurisdictional wetlands, plus an existing 1-acre mitigation wetland that was created in 1995. These wetland areas will be protected as part of the Project. The existing wetlands divide the Gasser property into two upland parcels known as E7 and E8. A portion of the soil excavated from the Project to create marshplains and floodplains will be placed at E7 and E8 to raise the existing elevation above the 100-year flood elevation and allow for development. The sides of the soil disposal areas (E7 and E8) will be sloped to provide a gradual transition between final disposal area elevations and existing grades. A total of 50 feet will be the buffer zone between the wetlands and the toe of the bottom of the slope. The side slopes will be planted with native grasses and trees for erosion control protection. The existing wetlands also function as a detention basin for storm water runoff and flood events.

3. Describe any plans for aquatic restoration resulting in in-stream benefits.

The Project is based on the Living River strategy which seeks to restore the river as a “living river.” The Project has been developed to balance sediment input with sediment transport, provide good quality fish and wildlife habitat, and maintain good water quality. The Project minimizes sedimentation, erosion, turbidity, and temperature changes. Overall, fisheries and aquatic habitat are expected to benefit from the habitat improvements over the long-term.

The Project design includes a slight slope for the marshplain and floodplain terraces to ensure that fish can leave these areas as water gradually drains out of them. Any channels constructed to allow for wetland or marsh establishment would follow a typical dendritic pattern, which would also allow fish to leave as tides recede.

The use of biotechnical bank stabilization methods will allow habitat attributes to replant near shore woody vegetation and emergent marsh vegetation on the upper and lower benches, respectively. This vegetation will provide in-stream and overhanging cover, introduce roots and other woody

materials into the river system, and assist in varying the near shore water velocities and depths. In addition, the upper and lower benches will vary the bank and channel configurations, respectively.

Additionally, the creation of 2.5 acres of tidal mudflat and 177 acre-feet of open water (at high tide), the removal of 8,400 feet of riprap from the tidal zone area (at elevation -2.7 or above) on 4.6 acres of streambank, the placement of new riprap on less than three percent of the surface area of the substrate in the Project reach, and a net decrease of 6,400 feet of riprap will improve critical habitat areas at the tidal zone and will result in an increase in system biomass.

4. *Discuss any natural landscapes within the site that support representative examples of important, landscape-scale ecological functions (flooding, fire, sand transport, sediment trapping, etc.)?*

The geomorphically-based Project design incorporating marshplain and floodplain terraces, setback levees, and use of the floodway, to increase floodwater flow capacity has been designed to maintain the river's sediment transport capacity and thus minimize sedimentation. The design also minimizes alteration of the active channel and thereby minimizes alteration of the river's salinity regime.

A2. Diversity of species and habitat types (70)

1. *Does the site possess any:*

   i. areas of unique ecological and/or biological diversity?
   ii. *vegetative complexity either horizontally or vertically?*

As described above, the Napa River is a linear wilderness through the Napa Valley. Within a cross-section of the river exist a broad range of habitat supporting biologically- and vegetatively-diverse populations. The river flows from upland forested habitat to unique salt-marsh habitat at its southern extent. The Project is designed to enhance habitat and wildlife through increasing connectivity between the river and the habitats, and creating additional high value habitats.

The following table presents the pre-Project and post-Project habitat values for the various types of habitat in the Project reach. As shown, the Project results in an overall increase in total habitat value.

Table V-1
Summary of Habitat Area Effects

HABITAT TYPE	ACRES IMPACTED	ACRES CREATED	CHANGE IN ACRES
Riparian forest-above the oxbow	1.92	1.56	-0.36
Riparian forest-below the oxbow	2.55	15.15	+12.60
Riparian forest-Napa Creek	0.97	0.97	0.00
Riparian scrub-shrub	1.80	10.68	+8.88
Low-value woodlands	11.24	0.00	-11.24
High-value woodlands	0.99	121.97	+120.98
Brackish Emergent marsh	7.32	160.72	+153.40
Seasonal wetlands	44.18	56.20	+12.02
Tidal mudflats	0.61	2.50	+1.89
Shaded Riverine Aquatic Cover	0.19	2.57	+2.38

Species that could potentially be found within the Project boundaries are discussed further below.

2. *Describe habitat components including year-round availability of water, adequate nesting/denning areas, food sources, etc.*

The creation of marshplain and floodplain terraces along the river provide for greater connectivity in habitat, thus improving the availability of food sources and nesting/denning areas. The tidal inundation of created marshplains assures year-round water availability in this unique habitat. The Project design intends to protect the natural seasonal variation in the salinity regime through the Project reach.

In addition, Project design bank stabilization and treatment methods provide for preservation of nesting/denning and refuge possibilities.

3. Describe any superior representative examples of specific species or habitats.

The lower reaches of the Napa River represents a significant example of the remaining salt-marsh habitats in the United States. The Project design increases such habitat. Responses to the question below provide a full discussion of the habitat and species encountered in the Napa River within the Project reach.

4. Does the site contain a high number of species and habitat types? List and describe.

The Project area consists of eight distinct cover-types, which are associated with varying wildlife species. These cover types and associated wildlife are detailed below.

Habitat areas along the Napa River are shown in Figures V-4 through V-6. Habitat on Napa Creek is not mapped, since it includes a very simple band of riparian forest vegetation, as described below.

Riparian Forest/Scrub-Shrub Habitat Native riparian tree species include cottonwood, black walnut, locust, valley oak, live oak, alder, box elder, California bay and California buckeye. Native shrubs and vines include sandbar willow, arroyo willow, blue elderberry, poison oak, wild rose, and blackberry. Several non-native tree and shrub species including blue-gum Eucalyptus, blackwood acacia, wattle (another species of *Acacia*), everblooming acacia, tree of heaven, fennel, and giant reed or bamboo also occur.

A dense corridor of mature riparian forest and scrub-shrub habitat is provided along the Napa River along the shoreline of the Napa River between Trancas Street to the southern end of the Oxbow. This habitat is also provided along the shore of Napa Creek and in some shoreline locations south of the downtown.

The riparian forest vegetation in this upper reach and along Napa Creek provides extremely high values to both fish and wildlife. The density and quality of riparian habitat gradually decreases proceeding downstream. In particular, riparian habitat values decrease significantly downstream of Lincoln Avenue and through the City of Napa. Residential and commercial developments, the dumping of concrete and riprap materials along the water's edge, and the introduction of non-native botanical species has led to significant degradation of native riparian vegetation along this portion of the river.

The shape of riparian zones (*i.e.,* narrow corridors) maximizes the extent of edge habitat, thereby increasing species diversity. Riparian habitat also enhances the value of adjacent fish and wildlife habitats. When adjacent to grasslands or agricultural land, riparian forests provide nest sites for raptors and cover for upland species that use these adjacent cover-types for foraging. In addition, riparian zones act as “connectors” *(i.e*., travel lanes) between habitats during species migration.

Woodlands In the Project area, woodlands are characterized by small (less than 1 acre) stands of individual groups of trees, consisting of a variety of species or the same species. There is little or no shrub understory layer and the herbaceous layer is characteristic of the annual grassland cover-type. Species included in this cover-type are black walnut, valley oak, blue spruce, Eucalyptus, alder, and redwood. "High value" woodland consists of species such as black walnut and valley oak, and "low value" woodland consists of species such as Eucalyptus.

Many of the woodland stands in the Project area are near highly disturbed areas. Low value woodlands are located on the west bank of the river across from Kennedy Park, on the Napa Sanitation District property, and in a few isolated areas near the downtown. High value woodlands are located in isolated patches throughout the river corridor.

The woodlands adjacent to the river are habitat for the western fence lizard, coast horned salamander, common king snake, racers, gopher snake, western toad, and possibly the tiger salamander.

Brackish Emergent Marsh Brackish emergent marsh habitat supports facultative wetland plants that tolerate varied hydrologic conditions. Three zones of vegetation comprise the brackish emergent marsh habitat type: the low marsh, middle marsh, and high marsh. The low marsh is dominated by California bulrush (*Scirpus californicus*) and mudflat areas; the middle marsh is a mixture of cattails and bulrushes; and the high marsh is a variety of halophytes, including saltgrass and Baltic rush.

Brackish emergent marsh is currently located along the east bank of the Napa River south of Imola Avenue, along the banks of New Tulocay Creek, on the west bank of the river across from Tulocay Creek, and in an isolated patch in the location of the proposed Bypass.

Seasonal Wetlands Seasonal wetlands consist of small depressions which, during the winter, accumulate small amounts of standing water. Species which use this area include the greater yellowlegs, snowy egret, and great blue heron.

Significant seasonal wetlands are located within Kennedy Park. A smaller patch of seasonal wetlands is also located along the east bank of the river on the Napa Sanitation District property. Additionally, there are significant seasonal wetlands between Soscol Avenue and the railroad tracks in the vicinity of Imola Avenue.

Intertidal Mudflats The intertidal mudflat cover-type is defined as a predominantly unvegetated (*i.e.,* not more than 30 percent cover) area that is flooded and unflooded daily due to diurnal tidal cycles. Emergent species grow at the landward edges of the mudflats, and mingles with the low marsh area.

Intertidal mudflats occur in the Project area as an exposed linear band of river bottom at low tide between the river and the river banks (from approximate elevation -2.7 NGVD to +0.6 NGVD). Specific locations include bands on the west bank of the river south of Kennedy Park and on the east bank of the river around Tulocay Creek.

Intertidal mudflats provide for a variety of aquatic invertebrates, which are a primary food source for fish, shorebirds, and wading birds. Mudflats and shallow water areas are used for wintering habitat as well as resting areas during migration by shorebirds such as the willet, sandpiper, dowitcher, and marbled godwit. Resident shorebird species include the killdeer and black-necked stilt. Many of these species may be seen in the Project area within the tidal reaches of the Napa River.

Shaded Riverine Aquatic Cover The Shaded Riverine Aquatic cover is defined as the near shore aquatic area occurring at the interface between a river and adjacent woody riparian habitat. This habitat area occurs adjacent to riparian vegetation that either overhangs or protrudes into the water. It contains variable amounts of woody debris, such as leaves, logs, branches and roots, as well as variable depths, velocities, and currents.

Shaded Riverine Aquatic cover is of high value to many wildlife species, which use these areas for food, cover, burrowing habitat, and access points to the water. Several reptiles and amphibians use this habitat for denning and/or basking sites, or to access such sites. Western pond turtles and other species of snakes, frogs, and salamanders are often more abundant in Shaded Riverine Aquatic cover than other terrestrial and aquatic cover-types along the Napa River. Mammals such as muskrat and raccoon also use this habitat for reproduction, either by burrowing into the banks, or gathering branches and building nests. Many songbirds and other birds which are particularly numerous in the riparian habitat along the river, such as the green-backed heron, mallard and belted kingfisher, also depend upon Shaded Riverine Aquatic cover for feeding areas, cover, and breeding sites.

Shaded Riverine Aquatic cover is located relatively continuously along both banks of the river north of the downtown.

Herbaceous/Grassland The herbaceous/grassland cover-type is represented by open range areas, consisting of predominantly natural grasses and herbs used primarily for pasturage.

This cover-type is found in significant portions of the Project area south of the downtown, and, north of the downtown, primarily on the Oxbow.

Herbaceous/grassland habitat provides important habitat for many species of reptiles, mammals, and birds. For example, small mammals, such as rabbits and mice, use these areas for food and cover; these species in turn provide a food base for larger animals such as coyotes and raptors. The grasslands adjacent to the river are habitat for the western fence lizard, coast horned salamander, common king snake, racers, gopher snake, western toad, and possibly the tiger salamander.

The Napa River contains a wide variety of resident and anadromous fish species. Species composition within the mixohaline, tidally influenced waters of the Napa River ranges widely from saltwater fish such as Pacific herring to freshwater fish such as common carp. Changes in salinity strongly influence what species occur in the Project area at any given time. A survey conducted in 1993 found that the two most numerous species were the topsmelt and the threadfin shad. Other fish species include striped bass, yellowfin goby, Sacramento splittail, Sacramento squawfish and the Sacramento roach made up the rest of the catch.

The Napa River also supports populations of game species such as bluegill, black bass, striped bass and sturgeon. Non-game species also include inland silversides and starry flounder, along with forage fishes such as threadfin shad and sculpin.

Four dominant species of invertebrates were also found in the Napa River at Kennedy Park. The two dominant mollusks were the soft shelled clam (Mya arenaria) and the Baltic clam (Macoma balthica). The dominant arthropod was the acorn barnacle (Balanus glandula) and the dominant polycheate was Arabella spp.

Sensitive species which have the greatest potential of occurring in the Project area are the following:

Central California Steelhead The Central California steelhead trout migrates from the ocean to freshwater in the fall and winter. They spawn in late winter and early spring (January through April). Incubation of eggs and emergence from gravel are from May and early June respectively. Fry remain in freshwater for 1 to 3 years to rear to juveniles before smolting and emigrating to the ocean. Emigration is usually from March to June. They mature after 1 to 2 years in the ocean, and then return to their natal stream to spawn.

Steelhead utilize the Napa River primarily as a migration route from December to May. Napa Creek can provide a year-round rearing area for young steelhead, but the creek within the Project area itself is not a spawning area. Steelheads are usually not in the Napa River from June through November.

Sacramento Splittail The Sacramento splittail is a large (up to 40 cm) minnow endemic to California's Central Valley. The species has been restricted to a small portion of its former range and is now found primarily in the Sacramento-San Joaquin Delta, Suisun Bay, Suisun Marsh, and Napa Marsh. The splittail is easily distinguished from other minnow species by the enlarged upper lobe of its caudal fin. It is tolerant of brackish water conditions, and can often be found in Suisun Bay, San Pablo Bay, and the Carquinez Strait following winter high-flow periods, when waters in these areas are relatively diluted. Splittail feed primarily upon benthic invertebrates. Spawning requirements appear to be similar to those of delta smelt, in that both species congregate for spawning in the dead-end sloughs of the Delta. Splittail apparently spawn on newly flooded stream bank vegetation or on beds of aquatic plants.

The Sacramento splittail is known to exist within the Project area. Splittail are freshwater fish capable of tolerating moderate levels of salinity [10-18 parts per thousand (ppt)]. Thus, during the summer months, it is unlikely that splittail stray below the oxbow reach, which has a salinity of approximately 11 ppt. When flooding season begins, splittail takes their "cues" from changes in water quality (i.e., temperature, salinity, etc) to spawn.

Chinook Salmon Juvenile Chinook may occasionally enter the lower reaches of the river, below the Project area.

Salt Marsh Harvest Mouse The salt marsh harvest mouse has been recorded from locations along the lower portion of the Napa River as far upstream as the marshes at Fagan Creek (adjacent to the Napa County Airport) and under the Highway 12 Bridge. Surveys and appropriate trappings (1996) near the Kennedy Park dredge disposal site produced no salt marsh harvest mouse. Areas upstream of the Napa marshes (and nearest sightings) have very little marsh habitat for this species, and the sparse marsh habitat that is present is both highly fragmented and of very poor quality.

American Peregrine Falcon The American peregrine falcon is an uncommon breeding resident and an uncommon migrant to California. Important yearlong habitats include riparian areas, and coastal and inland wetlands. Protected cliffs and ledges are needed for cover. It breeds in woodlands, forests, and coastal habitats. The Project area provides low- to moderate-quality foraging habitat for peregrine falcons, which are more typically associated with wetland and coastal than riverine habitats.

Mason's Lilaeopsis Mason's lilaeopsis is a low, hairless, perennial plant that spreads by rhizomes and forms low bright green sod mats on wave cut benches along fresh water channel banks. Lilaeopsis flowers from May to August and can usually be found in both flower and fruit from June to November. Mason's Lilaeopsis requires tidally inundated habitats with emergent marsh vegetation and specific types of rooting substrate. It tends to form a sod at the margin of the water where it is frequently inundated by waves and tidal fluctuation. It grows on low wave-cut banks and on downed logs and wooden structures, primarily in brackish waters, but also can occur in freshwater marshes and rivers. The plant generally grows in soil high in clay, on stable shoreline mudflats, on semi-stabilized substrate such as partially buried logs with debris and soil deposited in cracks. The lilaeopsis can be found in the lower reaches of the Napa River.

5. *Does the site contain populations of native species that exhibit important subspecies or genetic varieties historically present prior to European immigration?*

The populations of native species associated with the various habitats along the Napa River are discussed in response to the previous question.

A3. Ecological importance of species and habitat types (100)

1. Discuss the significance of habitat types at this location and include any local, regional, or statewide benefits received by preserving or improving the area.

As discussed above, the Project area consists of eight distinct habitat types, which are associated with varying wildlife species. Because the Project is based on the Living River strategy, which seeks to restore the river as a "living river", the preservation and improvement to these areas are a key component of the Project. Therefore, the Project provides for local, regional and statewide benefits though preservation and enhancement of important ecological features.

2. *Does the site contain any significant wintering, breeding, or nesting areas? Does it fall within any established migratory corridors? What is the level of significance? How are these affected by the project?*

The Napa River is used by the Central California steelhead as a migration corridor from December to May to their spawning and rearing grounds in Tulocay, Napa, Redwood, Milliken, Dry and Bell Canyon creeks. Napa Creek can provide a year-round rearing area for young steelhead, but the creek within the Project area itself is not a spawning area.

The river system is also an important nursery area for juvenile steelhead and striped bass. The Napa River itself provides about five miles of nursery habitat with an additional 30 miles of habitat in the tributaries. The channel

bottom and the in-stream vegetation within channels afford spawning and rearing habitat for several species of estuarine and marine fish.

The Sacramento splittail, a federally-proposed endangered species, is also known to exist within the Project area. Splittail are freshwater fish capable of tolerating moderate levels of salinity (10-18 parts per thousand [ppt]). Thus, during the summer months, it is unlikely that splittail stray below the oxbow reach, which has a salinity of approximately 11 ppt. When the winter flooding season begins, splittail takes their "cues" from changes in water quality (i.e., temperature, salinity, etc) to spawn.

In addition, bird species, small mammals, reptiles, and amphibians may use the habitats described above for wintering, breeding, or nesting.

During construction of the Project, these species would be lost or displaced to adjacent areas. The loss of large trees would temporarily eliminate nesting and roosting habitat for several bird species, and the loss of brackish-emergent marsh and seasonal wetlands would temporarily adversely affect wading birds such as herons and egrets.

However, the implementation of the Project will result in the net increase in habitat value as described in Table V-1 as well as provide positive benefits to the overall ecological system of the river. The Project will also provide a continuous, linear riparian habitat corridor for wildlife through the urbanized area, and an increased in spawning habitat for the Sacramento splittail.

Annual sampling to date has documented that restoration of the SWOA is already providing habitat for native and non-native species. Over 2,500 adult and juvenile fish, consisting of 17 native and non-native species, have been caught to date (July to December 2001). The restored SWOA is already showing use by Sacramento splittail. The dominant species in the area were inland silverside and striped bass, and the only listed species captured was Sacramento splittail. Over 3,000 larval delta smelt were captured in 20mm tow-net surveys in the mainstem Napa River between March and May, along with over 51,500 larval fish of 16 other species. The sampling program to date has documented use of the Project area by 24 different larval, juvenile, and adult fish species.

3. *Describe any existing habitats that support any sensitive, rare, "keystone" or declining species with known highly restricted distributions in the region or state. Does the site contain any designated critical habitat? How are these affected by the project?*

The discussion of habitat preservation and creation in responses to the questions above describe the Project effects on the range of habitat in the Napa River vicinity. As discussed, the Project area is a key habitat for rare and sensitive species such as the Mason's lilaeopsis, California steelhead, birds, etc. These critical habitats will be temporarily impacted (i.e., displacement) with

construction. However, at the completion of the construction/restoration, the net increase in habitat values will provide for additional sensitive and rare species.

4. *What is the amount of shaded riverine aquatic (SRA) and riparian habitat to be developed, restored, or preserved?*

Table V-1 below shows the amount of areas of SRA and Riparian habitats created by the Project. As shown, a total net increase in 23.86 acres of SRA and riparian habitat is associated with the Project.

A4. Public benefits accrued from expected habitat improvements (60)

1. *Describe present public use/access, if any. For instance, does or will the public have access for the purpose of wildlife viewing, hunting, fishing, photography, picnics, etc.*

The Project design includes several interpretive facilities to allow the public to enjoy and understand the Napa River Flood Control Project and its "Living River" strategy. Specific components would include:

- 5 miles of paved pedestrian/bicycle trail that integrates with the existing city trail system and doubles as a maintenance road/recreation trail.

- Interpretive displays, benches, drinking fountains, lookouts are planned as part of the Project.

The Project would also maintain existing boat access to the Napa River at various locations along the river as well as fishing and river observations access.

2. *Discuss areas on the site that are critical for successfully implementing landscape or regional conservation plans. How will the project help to successfully implement the plans?*

There are several areas in the Project where landscape and conservation plans will be implemented as part of the design. These measures are associated with mitigation and bank stabilization plans. A description of these areas/plans is provided below and are depicted in Figures V-7 through V-14:

Marsh Plain Protection--Vegetative Cover with Trees: Treatment Method 1A Treatment Method 1A would use trees and other vegetative cover to protect the transitional slope between the marsh plain and the floodplain terraces. Emergent marsh vegetation, such as bulrushes and cattails, would be planted in a five foot strip at the toe of the floodplain terrace slope. Riparian vegetation would be planted on the transition between the terraces starting at elevation +2 NGVD, and would extend 40 feet into the floodplain terrace. The extreme lower elevations above the emergent marsh would consist of willow

species with cottonwood, sycamore and box elders above them. Oaks and Oregon ash would be mixed further into the floodplain. An understory of herbaceous and woody plants would be planted throughout this area and would consist of coyote brush, mule fat, mugwort, California wild rose and salmonberry. Native perennial grasses would be provided as a cover crop over the entire planting area.

This bank stabilization method would be in areas such as the edge of the marshplain terrace on the east side of the river in Kennedy Park, just north of Imola Avenue, around New Tulocay Creek and near Soscol Avenue and Third Street (765+00 to 777+00), and on the west side of the river at the southern end of Riverside Drive (732+00) to Tannery Row (715+00).

Marshplain Protection--Vegetative Cover without Trees: Treatment Method 1B Treatment Method 1B would also use vegetative cover to protect the transitional slope between the marshplain and floodplain terraces. However, it would not include riparian vegetation above the emergent marsh plantings. Native perennial grasses would be seeded above the emergent marsh.

This treatment method would be used in areas where flood flows must be able to pass between terraces with minimal resistance, or where salinity conditions of soil will not likely support dense riparian vegetation. This method is proposed for the transition between the marsh and flood terraces on the west bank of the river opposite Kennedy Park and on the east bank in some areas around Imola Avenue, New Tulocay Creek and Oil Company Road.

Floodplain Protection--Vegetative Cover with New Trees: Treatment Method 1C Treatment Method 1C would be similar to Method 1A, but it would be used to protect the slope above the upper floodplain terrace extending to a floodwall or training dike (as opposed to the outside the marsh plain.) A cover crop would be planted as erosion control. Terrestrial vegetation, dominated by oaks, would be planted in the upper areas.

It is proposed for the outside of the entire length of the new flood plain along the east side of the river south of the current location of the Rough Rider Building (765+00).

Floodplain Protection--Vegetative Cover with Existing Trees: Treatment Method 1D and 1E Treatment Method 1D would be used to protect stream banks that have high quality existing vegetation and a floodwall. In locations where the vegetation is not dense enough to function as erosion protection, riparian vegetation dominated by oaks would be used to infill both the upper story, and understory species. A cover crop would also be used. Treatment Method 1E would be the same design as Treatment Method 1D, but would not have a floodwall.

Method 1D would be used on the west side of the river north of the Oxbow from an area near Randean Way (825+00) north to North Bay Drive (844+00).

Method 1E would be employed at the edge of the existing river channel around Imola Avenue, where an “island” would be left intact to support the existing Maxwell Bridge abutment. It would also be used on the east side of the river from the middle of the Oxbow (807+00) north to about Stonecrest Drive (860+00). Since the existing vegetation does not need to be removed in these areas, it would be retained in this treatment method.

Rock Toe with Bench and Vegetation: Treatment Method 2 Treatment Method 2 would provide a high degree of bank protection with minimum impacts to existing terrestrial vegetation. Rock would be used to provide toe protection. The top of rock elevation may vary, but generally would be set at - 1.5 NGVD, so it would be submerged at most times of day except low tides. The rock width would vary from 1½ to 5 feet, and would extend to a rock key in the channel invert.

Pole cuttings of willows would be placed through the top of the water side edge of the rock. These pole cuttings would be placed to reduce near bank velocities and promote deposition, which would in turn lead to the establishment of emergent aquatic vegetation in and above the rock. These pole cuttings would function as a structural member and do not need to live to be effective. At elevation +2 NGVD, a continuous willow pole cutting “fence” would be installed at the base of the slope. This fence would retard erosion down the slope and when fully grown, would protect the slope from wave wash. This would allow the existing slope to remain relatively undisturbed, thus maintaining the shaded riparian aquatic cover that currently exists in the areas where this treatment would be used.

This treatment method would be used on the west side of the river just north of Imola Avenue, near Station 715+00 (Tannery Row), and along Riverside Drive from Elm Street north to the Hatt Building (760+00).

Rock Toe with Vegetative Cover Above: Treatment Methods 3A, 3B and 3C Treatment Method 3A is designed to provide a high degree of bank protection in areas that are subject to extreme erosive forces that could jeopardize a floodwall or levee. Protection would be afforded through a rock toe, keyed into the channel invert with terrestrial vegetation on the upper bank. To increase the value of fish habitat, root wads would be placed in the rock, below mean tide. The root wads would extend into the channel roughly 2 to 4 feet.

Pole cuttings would be installed in the rock from elevation +2 NGVD up. These pole cuttings would consist mostly of willow and cottonwood species. Riparian vegetation would be installed from the top of rock to the floodwall. Understory similar to Treatment Method 1A would be provided throughout the riparian plantings. A coir-fabric cover, with erosion control seeding, would extend from the top of rock to the top of slope.

Treatment Method 3B would use the same design as 3A, except that lunkers would be placed in the revetment for fish habitat in place of root wads.

Treatment Method 3C is similar to 3A, except that at the top of the revetment, log cribwalls would be constructed to protect the upper slope and terrestrial vegetation would be planted in the cribwalls.

Treatment Methods 3A, 3B and 3C would only be installed in limited locations where strong erosive forces are expected. They would be used around parts of the outside east edge of the Oxbow (780+00 to 807+00), at the mouth of the Bypass (820+00 to 825+00), from Lincoln Avenue to the north end of the RV Park and at the northern end of the Lake Park subdivision (887+00 to 893+00).

Gasser Side Slopes The side slopes along the Gasser property of E7 and E8 will be planted with native grasses and nonnative grasses (i.e., California Brome, Meadow Barley, Creeping Wildrye, Rose Clover) and trees and shrubs (i.e., California Buckeye, Salt Bush, Coyote Brush, Mulefat, Toyon, Coffeeberry, Gooseberry, Wild Rose, Red Willow, Arroyo Willow, Elderberry).

Contracts 1 and 2 The District has entered into a Memorandum of Understanding with the California Department of Fish and Game to provide for the protection of Mason's lilaeopsis, a State-designated rare plant, during the construction of the Project. Mason's lilaeopsis are to be transplanted to each of three locations: the west bank of the Napa River upstream from Horseshoe Bend in the southern portion of the Contract 1A area, along the east bank in the Contract 1B area, and along a first order channel in the newly restored floodplain terrace zone in the east bank in the Contract 1B area.

The mitigation and bank stabilization plan as proposed are necessary to successfully implement the Project. The use of biotechnical measures requires diligent monitoring and maintenance. The monitoring and maintenance are required by the RWQCB under a Waste Discharge Requirements issued for the Project.

3. *Describe the surrounding vicinity. Include the presence or absence of large urban areas, rapidly developing areas, and adjacent disturbed areas with non-native vegetation and other anthropogenic features. Do any surrounding areas detract from habitat values on the site?*

The area surrounding the Project is largely urban as the Napa River bisects the City of Napa. Ordinances in the city and county of Napa are designed to limit the spread of urban growth by establishing a Rural-Urban Limit (RUL) line and enforcing so-called "infill" policy to require development and encourage redevelopment within the urban limits.

Although the reach of the Project transects urban land, as described above, the river is a continuous wilderness and the Project design enhances this linear range of habitats to achieve the living river strategy.

4. Describe compatibility with adjacent land uses.

The Project design enhances the adjacent land uses through establishment of recreational trails and improvement of visual and ecological features. The Napa River is a vital feature in the landscape of downtown Napa, providing for important recreational and aesthetic elements. The pre-Project condition of the river reveals significant underutilized potential. The infrastructure improvements of the Project design also serve to protect the ecological health of the river and its adjacent habitats.

A5. Viability/sustainability of habitat improvements (40)

1. Describe any future operation, maintenance and monitoring activities planned for the site. How would these activities affect habitat values?

The operation, maintenance, and monitoring activities for the Project are necessary to successfully maintain the 100-year flood protection as well as to achieve the "Living River" strategy. These activities are also required by various regulatory agencies in order to protect or restore the environmental resources to offset adverse effects where avoidance is not possible. Several key documents provide for/require monitoring and maintenance of the Project following construction as discussed below:

Waste Discharge Requirements issued by Regional Water Quality Control Board

The "Napa River Flood Protection Project Mitigation and Monitoring Plan, Prepared by Jones & Stokes, dated January 2001" (Appendix V-1), and "Performance-Based Hydraulic Monitoring and Maintenance – Napa River Flood Protection Project O&M Manual, Prepared by Jones & Stokes, dated January 2001" (Appendix V-2), contain detailed information on the maintenance and monitoring of the Project.

In summary, these two plans were developed by a workgroup consists of the following representatives: Regional Water Quality Control Board, California Department of Fish and Game, Natural Resources Conservation Service, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, the Technical Advisory Panel, the Corps, Napa County Mosquito Abatement District, and the District. The regulatory agencies will use the Plans to verify that the mitigation fulfills the requirements of the Project permits and authorizing documents.

These Plans as well as the requirements in the WDR require that wetland mitigation monitoring be performed for a minimum of 5 years from the completion of construction at the mitigation sites. Riparian vegetation will be monitored for 10 years, or until performance criteria have been satisfied. Monitoring of indicators to assess ecological functions and habitat values for the Project is identified in Table 5-1 of the "Performance-Based Hydraulic Monitoring and

Maintenance – Napa River Flood Protection Project O&M Manual, Prepared by Jones & Stokes, dated January 2001.

U.S. Fish and Wildlife Service (USFWS) Biological Opinion

A Napa River Fisheries Monitoring Program (FMP) was developed as a requirement of the April 9, 1999 USFWS biological Opinion for the Project (see Appendix V-3). The FMP is primarily designed to detect the presence of fish species in the program area before and after construction of the Project. The objectives of the FMP are to document presence and relative abundance of fish species utilizing restored and created habitats, document life stages and seasonality of fish species in restored and created habitats, and determine if correlation exists between collected fish species and environmental conditions at each sampling site.

Memorandum of Understanding (MOU) between the Department of Fish and Game and the District The purpose of the MOU is to provide for the protection of Mason's lilaeopsis, a State-designated rare plant, during the construction of the Project. The MOU specifies mitigation measures as well as monitoring requirements. It establishes a baseline number of colonies of Mason's lilaeopsis before construction, and final performance standards. The Mason's lilaeopsis are surveyed annually for ten years to determine the performance standards, and to evaluate the effectiveness of the planting. A copy of the MOU is contained in Appendix II-7.

2. *Does the site contain large areas of native vegetation or is it adjacent to large protected natural areas or other natural landscapes (for example, a large stand of blue-oak woodland adjacent to public land)?*

As indicated previously, the Project will result in the following:

- Creation of 160.7 acres of emergent tidal marsh (56 acres marshplain terraces/104 acres SWOA);
- Creation of 56.2 acres of seasonal wetland (45 acres floodplain terrace/11.2 acres SWOA);
- Creation of 2.5 acres of tidal mudflat (riprap removal, marshplain terraces);
- Creation of 30.95 acres of riparian habitat (throughout the Project);
- Conversion and enhancement of 262 acres of diked and grazed seasonal wetlands to high value emergent tidal wetlands (SWOA);
- Enhancement of 136 acres of diked and grazed seasonal wetland (Stanley Ranch). This land will be maintained and managed for seasonal wetland values;
- Creation of 11 acres of woodlands; and
- Enhancement of 72 acres of uplands adjacent to wetlands.

Additionally, Mason's lilaeopsis, a special status species, which will be impacted by construction activities, will be mitigated at a ratio of 2:1. It is

expected that abundance of this species will be found in the lower reaches of the river due to the restoration efforts. The Gasser Property, consisting of parcels E7 and E8 are located adjacent to jurisdictional wetlands. The side slopes of E7 and E8 will be planted with native grasses and trees as part of the Project. Native vegetation will be used in biotechnical stabilization methods as well as planted in created marshplains and floodplains.

3. *Is the watershed upstream of the site relatively undisturbed or undeveloped and likely to remain so into the foreseeable future? Describe its condition.*

The Napa River watershed upstream of the Project reach is largely rural in nature with vineyards dominating the valley floor. The upland areas are largely undeveloped and are expected to remain as such due to the topography. Some growth of the smaller cities and towns along the Napa River can be expected. Although the water quality entering the upstream Project reach is generally good, regulations for storm water drainage are expected to protect and improvement water quality from the current situation.

4. *Describe any populations of native species or stands of native habitats that show representative environmental settings, such as soil, elevations, geographic extremes, or climatic conditions (for example, the wettest or most northerly location of a species within the state.)*

Other than the habitat and species descriptions provided above in response to previous questions (e.g. presence of rare, sensitive and endangered species such as Mason's lilaeopsis), no geographical extremes are known to exist.

B. (340xF_a points) Agricultural Land Conservation Benefits

The Napa River Project is not designed to provide agricultural land conservation benefits; therefore, Section V. B. does not apply.

Section VI. (320 points) Miscellaneous Benefits and Quality of Proposal

A. Size of request, other contributions, number of persons benefiting, cost of grant per benefited person (40)

Estimated Total Project Cost	$256 million
Amount of FPCP Grant Funds Requested	$5 million
Amount of Local Funds Contributed	$78 million
Amount of In-kind Contributions	_____
Additional Funding Sources	$178 million
Number of persons expected to benefit	124,279
Flood Protection Corridor Funds per person benefited.*	$40

(* Count as beneficiaries those receiving flood benefits, recreational users of habitat areas protected by the Project, and consumers of food products from agricultural areas conserved by the Project.)

B. Quality of effects on water supply or water quality (90)

1. *Will water stored by the project provide for any conjunctive use, groundwater recharge, or water supply benefit?*

No, the largest storage volumes will be tidal.

2. *Does the project fence cattle out?*

Cattle grazing will not be permitted on lands that are used for flood protection benefits under this Project.

3. *Does the project pass water over newly developed fresh water marsh?*

Yes. As previously discussed, the Project will create marshplain and floodplain terraces as well as wetland areas. See Section IV for further discussion.

4. *Does the project trap sediments?*

Because of the geomorphic-based approach of the Project, deposition within the floodway would be minimized, but it would not be eliminated. The main channel, the marshplain terrace, and the floodplain terrace would all accumulate sediments after the Project is constructed. The design elevation of the levees and floodwalls are established to accommodate some sediment before material would have to be removed. However, periodic removal of deposited sediment would be necessary. Removal of sediments in the river channel would probably need to occur approximately once every 10 years in selected areas. The marshplain terrace and floodplain terrace have deposition

rates of approximately 0.5 inch per year and could require deposition removal every 20 to 25 years.

C. Quality of impact on underrepresented populations or historic or cultural resources (60)

1. Does the project benefit underrepresented populations? Explain.

Currently, most of the residents along the Napa River who are affected by the Project have a lower median income than the City of Napa as a whole. Additionally, these residents make up a larger minority population than the City of Napa as a whole. However, any impacts of the Project on minority and low-income populations are offset by the flood control protection. Since low-income and minority populations are disproportionately concentrated in areas closest to the river where they are subject to some of the greatest and most frequent flooding, these same populations would receive disproportionately large benefits from flood protection. This benefit offsets any negative socio-economic impacts on low-income and minority populations. Therefore, the implementation and completion of the Project would benefit the underrepresented populations.

2. Are historical or cultural resources impacted by the project?

Napa is a historic city, and there are a number of historic structures and archaeological sites, which are City landmarks, locally significant, and/or eligible for the National Register of Historic Places. These landmarks are in the area to be affected by the Project and are identified below:

Table VI – 1
Buildings with Potential Historical Significance in the Vicinity of the Project Area

Address	Property Description	Date of Construction	CL/LS	NCHC Map Code [a]	NRHP Status Code	Potentially Affected by Project
948-952 Third Street	Jaekle Brothers Planning Mill	1930	LS	3	6y1[a]	√
705 Soscol Avenue	Rough Rider Building	1936	LS	n/a	6y1[a]	√
1410 Seminary Street	Residence	1885	LS	3 - CD	4s2	√

Napa Historic Resources Inventory Map Score
3 = Not individually eligible for National Register listing or designation as a landmark, but may be a contributor to the formation of a historic district.
4s2 = May become eligible for separate listing in the NRHP when more historical or architectural research is performed on the property.
6y1 = Found potentially ineligible for NRHP listing under category 4 (contributor or potential contributor to a fully documented district that may become eligible for the NRHP) and of no local interest under category 5 (not eligible for the NRHP but of local interest).

n/a – not available.
CD – Calistoga Avenue Historic District.
LS – eligible to be or designated as Locally Significant.
[a] – City of Napa Planning Department, August 26, 1997.

Table VI-2
Bridges with Potential Historical Significance in the Project Area

Location	Bridge Number	Date of Construction	Date Modified (if applicable)	Rating	LS	Eligible for NRHP	Potentially Affected by Project
First Street Bridge (Napa River)	21C-95	1914	-	2 [a]	√	√ [a]	√
Third Street Bridge (Napa River)	n/a	1930's	-	n/a	√	potentially	√
First Street Bridge (Napa Creek)	21C-96	1860	1950 – widened	5 [a]	√		√
Seminary Street Bridge (Napa Creek)	21C-92	1904	1933 – widened	5 [a]	√		√
Coombs Street Bridge (Napa Creek)	21C-94	1920	unknown date-widened	5 [a]	√		

Survey Rating
2 = Eligible for listing in the NRHP.
5 = Determined not eligible by the SHPO.

n/a – not available.
LS – eligible to be or designated as Locally Significant.
NRHP – National Register of Historic Places.
SHPO – State Historical Preservation Officer.
[a] – California Department of Transportation, 1985.

Several additional significant archaeological and cultural resource sites are known to exist in the Project area. These sites are:

River Glen Site. The River Glen site (CA-Nap-261) is located approximately one-half mile south of Site CA-Nap-14, east of Shoreline Drive, also on the west bank of the river. The site, despite its disturbed condition, was determined eligible for listing on the National Register of Historic Places due to its research potential. The site was subjected to data recovery in 1976, and in addition to human interments, the existence of an upper stratum of disturbed late period deposits was confirmed to overlie a relatively undisturbed Late Archaic (Middle Horizon) midden. The site was revisited and tested in 1993 and although the site was noted to have been further disturbed in the intervening years, it retained sufficient integrity to remain eligible for listing on the National Register.

Chinatown Site. The Chinatown site is in China Point Park at the confluence of the Napa River and Napa Creek. Napa's Chinatown originally encompassed the park and extended east to Chanterelle Restaurant and north to the First Street crossing of Napa Creek Bridge. It is the location of a former small Chinese residential neighborhood which flourished during the latter half of the century, from the 1850s to the 1930s. Site CA-Nap-744H was intensively tested in 1989, and archaeological deposits were located which were determined that the integrity of the site had been compromised and disturbed to such a degree that it was not eligible for listing to the National Register of Historic Places. Further documentation may, however, yield tangible resources representing Chinese business and household life, and perhaps uncover the foundation of the Chinese general store and temple (located near the Chinatown marker). Since Chinatown's housing was built on piers, excavation could also yield remnants of wood pilings used for support. This site is considered locally significant by the

Napa community, although it has not been formally recognized by the Napa Cultural Heritage Commission.

Embarcadero and Napa River Steamer Landing Site. The site of the Embarcadero and the Napa River Steamer Landing, adjacent to the Napa River near Brown and Division Streets, was examined in 1993 during a study of riverbank resources. This site was the departure point primarily for the shipping of agriculture to San Francisco in Napa's early history of farming in the mid-19th century, although some human passage originated there as well. This location was determined to have been too heavily altered and disturbed to retain research values sufficient to support listing on the National Register. However, the site is considered to be locally significant

Unknown Archaeological Sites. Given the fact that the Project will take place along a river and creek, which constitute likely areas for Native American and early European settlement and use, the possibility of the discovery of additional archaeological sites cannot be ruled out.

The Corps adopted a Memorandum of Agreement with the State Historic Preservation Officer, the District, Caltrans, and the City of Napa incorporating the mitigation measures for cultural resources as proposed in the final SEIS/EIR, and to address impacts to archaeologically and historically significant properties. The Memorandum of Agreement ensures that all mitigation measures meet all applicable elements of the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation. Coordination would also be initiated with the local organizations of Native Americans, known as the Suscol Council and the Wappo Tribe, which coordinates with government agencies regarding archaeological resources. The Corps, the District, and the City of Napa will coordinate with the Suscol Council and the Wappo Tribe to a establish burial plan in the event that Native American human remains or artifacts are unearthed during construction.

D. Technical and fiscal capability of the project team (60)

1. Does the project require scientific or technical expertise, and if so, is it provided for in the grant proposal?

Yes, the Project requires technical expertise, and is provided for in the grant proposal. The District has on staff engineers and analysts, biologists, geologists and hydrologists, as does the Corps. Members of the Project team's qualifications are discussed in Section II.

2. *Grant funds will be available in phases. What monitoring and reporting mechanisms are built into your administrative plan to track progress, initiation, and completion of successive phases?*

Monitoring and reporting are required by a number of agencies with which the District deals. The District must monitor the Project and report to the following agencies:

a. State Water Resources Control Board related to its Revolving Loan Fund contract. The Board requires progress reports and annual reports evaluating the effectiveness of the Project in removing sediments, nutrients, and other nonpoint source pollutants caused by urban runoff and upstream agriculture activities.
b. The Corps as the District's partner in the Project. District activities and Corps activities are intertwined and must be closely coordinated.
c. State Department of Water Resources.
d. Regional Water Quality Control Board.
e. Department of Fish and Games.
f. U.S. Fish and Wildlife Service.
g. National Marine Fisheries Service.
h. U.S. Environmental Protection Agency.
i. Napa County Flood Control and Water Conservation District Board.
j. City of Napa.
k. Technical Advisory Panel.
l. Financial Oversight Committee.
m. Any other agencies who have granted funds such as FEMA and the California Coastal Commission.

3. *Please outline your team's management, fiscal and technical capability to effectively carry out your proposal. Mention any previous or ongoing grant management experience you have.*

The District has on staff a full-time Project Manager, a Principal Engineer, two staff engineers and an engineering aide, a biologist, a geologist and an accounting specialist. Additionally, the District contracts for specialized services such as property acquisition as needed and has at its disposal the services of County and City offices including Public Works, Environmental Management, Auditor/Controller, Treasurer/Tax Collector, etc.

E. Coordination and cooperation with other projects, partner agencies, and affected organizations and individuals (80)

1. *List cost sharing and in-kind partners and any other stakeholders involved with your project and indicate the nature of their contribution, if any. Address the team's ability to leverage outside funds.*

a. Corps = 50% of the cost of the Project.
b. Department of Water Resources Subventions Funds = Helps local sponsor (the District) fund its share of approved Corps projects as State budget allows.
c. California Coastal Commission = grant funds of $1.6 million.
d. Federal Emergency Management = $4.1 million.
e. Federal Highway Administration = 80% of certain bridge construction costs (First and Third Street).
f. City of Napa.
g. Citizens for Napa River Flood Management = this group brought together a diverse group of local engineers, architects, aquatic ecologists, business and agricultural leaders, environmentalists, government officials, homeowners and renters, and numerous community organizations. This group was formed to design a flood management plan that was acceptable to both the Corps and the community. The result of their work is the Project being implemented.

On March 3, 1998, the voters of Napa County made the Project possible by approving the plan and approving a half-cent sales tax for 20 years. Each year the sales tax will raise $8 to $10 million. While this source of funding will remain stable, the Project also relies on annual appropriations from the Federal Government. These two sources of income, the sales tax and Federal appropriations, account for 90% of the Project costs. However, as Project costs have increased, so has the need to seek outside funding.

The District has leveraged its future sales tax and other revenues in order to procure State Revolving Loan Fund monies and to issue $42 million in bonds.

2. *Does your project overlap with or complement ongoing activities being carried out by others (such as CALFED, the Sacramento and San Joaquin River Basins Comprehensive Study, the Delta levee program, local floodplain management programs, the Reclamation Board's Designated Floodway program, or a multiple objective regional or watershed plan)? If so, indicate any coordination that has taken place to date or is scheduled to take place in the future.*

The Project complements activities that have been carried out by CALFED as they have issued a grant for the land purchases in the SWOA. The Project also complements the watershed work that is in progress. The District is the watershed coordinator through participation with a county wide program that is currently under development as well as the NPDES which the District is the lead agency for all the cities within the County of Napa.

3. *Will this application, if approved, begin the next phase of a previously approved project or advance an ongoing project substantially toward completion?*

These grant funds will help advance the Project. The Project began in 1998 and is scheduled to be completed by 2006. Land and Project construction cost increases, coupled with recent economic conditions, places strain on the Project finances.

4. *Describe how the proposal demonstrates a coordinated approach among affected landowners, local governments, and nonprofit organizations. If other entities are affected, is there written support for the proposal and a willingness to cooperate?*

Since the 1930's Napa County residents have made several concerted efforts to address flooding. The most recent effort began in 1965, when Congress authorized the development of a detailed project proposal for flood protection. In 1975, the Corps submitted the first proposal under the 1965 Authorization. Napa County voters rejected the proposal in referendum election in both 1976 and 1977, and it was subsequently shelved. When the floods of 1986 hit the Napa valley, the City of Napa requested that the Project be reactivated. The Corps responded with a revised proposal in 1995. Again, it was deemed unacceptable.

As frustrating as the rejections were, not just for the Corps, but for all those who desperately wanted a solution, a new approach emerged which looked at flood control from a broader, more comprehensive perspective. Citizens for the Napa River was formed which brought together a diverse group of local engineers, architects, aquatic ecologists, business and agricultural leaders, environmentalists, government officials, homeowners and renters, and numerous community organizations.

Through a series of public meetings and intensive debates over every aspect of Napa's flooding problems, the Citizens for Napa River Flood Management crafted a flood management plan offering a range of benefits for the entire Napa region. The Corps served as a resource for the group, helping to evaluate their approach to flood management. The final plan produced by the Citizens for Napa River Flood management was successfully evaluated through the research experience and state of the art simulation tools developed by both the Corps and numerous international experts in the field of hydrology and other related disciplines. The successful of this collaboration serves as a model – not just for Napa, but for the Nation.

The Project has received a number of awards related to its collaborative creation and its environmental sensitivity.

- 1998 American Institute of Architects Award.
- 1998 American Society of Landscape Architects Award.
- 1998 California League of Cities Helen Putnam Award.
- 1999 Friends of the San Francisco Estuary Award.

- 1999 Outstanding Comprehensive Conservation and Management Plan Implementation Project Award from SF Bay State Estuary Conference.
- 1999 Governor's Environmental and Economic Leadership Award from the California EPA.

Cooperation among the Cities and the County has made this Project possible. With the passage of the sales tax measure and approval of the voters, the District Board was expanded to include the Mayors of all the cities within the County. Additionally, the cities loaned a large portion of their share of the sales tax to the Project for the first seven years in order to ensure the Project had sufficient funding.

Based on the awards received and the national attention and recognition given to the Project, completion of this Project deserves continual funding and support.